

revised table A 2  
included in this  
photocopy

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March 5, 1964

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ATTENTION: [redacted]

Reference: [redacted] Proposal No. 112-GD64

Dear Sir:

[redacted] respectfully submits the following addendum to our Proposal No. 112-GD64 submitted to your organization 21 February 1964. This addendum includes items of clarification and additions as per our discussions subsequent to 21 February. A new CPFF program cost and price analysis No. 112-GD64-A totaling [redacted] is attached. This supersedes the previous cost and price analysis No. 112-GD64.

## A. Regarding Proposal 112-A - Airborne Operations

Item 1 - SSD/RS-7 Modification

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Proposal A offered to modify [redacted] SSD/RS-7 to improve its resolution to approximately 1 milliradian at a fixed price of [redacted]  
[redacted] hereby offers the same work as follows:

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## LABOR

1 man/month - MTS - 28

## MATERIAL

[redacted]

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1 man/month - Assoc. Eng. - 26

Declass Review by NIMA / DoD

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Item 2 - Resolution Testing

flights over both real target types and test objects in the Dallas area, with post flight evaluation and mensuration.

Sub-Task 1 - Preparation

Upon contract award, we will pursue the design and assembly of various test objects.

## a. Visible Test Objects

The primary camera test object is planned to be a simplified version of a conventional two dimensional resolution chart<sup>1</sup>, prepared on sections of thin plywood or construction board to facilitate handling and use. Recording of this chart by the airborne camera will serve to:

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- 1) insure camera system calibration, orientation and operation,
- 2) [redacted]
- 3) provide reference for mensuration of target type objects imaged by the camera

Secondary camera system test objects will consist of folding cardboard boxes and poles of several heights. When erected at a test site there geometry and shadows they cast will serve to establish the camera system's performance and resolution for the collection of stereoscopic imagery.<sup>2</sup>

The three dimensional objects and possibly portions of the resolution test chart will include an appropriate gray scale. Measurement of incident solar illumination at and reflection from portions of the gray scale will be related to the various film exposure and processing factors (See Section III. C., Proposal A, and Item 3, below).

<sup>1</sup> Manual of Photogrammetry, 2nd Edition, 1952, page 37

<sup>2</sup> "The Future of Photogrammetry and Photo Interpretation," by Robert M. Colwell, University of California, Photogrammetric Engineering, Vol. XXV, No. 5, December 1959.

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Sub-Task 2 - Test Design

The actual test program will begin with design of several data collecting tasks to be pursued in the Dallas area. The first of these will include the placement of all the aforementioned test objects on a uniform background material, e.g., the main airstrip at Addison Air Field. Subsequent tests will include data collecting over the test objects located in various combinations of natural and cultural backgrounds (e.g., respectively White Rock Lake Park and Texas National Guard Armor Motor Pool, Irving, Texas).

All tests will be designed and scheduled to permit imagery processing and data evaluation as could affect the nature and performance of subsequent tests.

Sub-Task 3 - Test Performance

Airborne data collection will be made in conjunction with full use of pertinent ground truth equipment (See Section II, Proposal B) according to the design plans. Flight profiles will be equivalent to those to be used during the operational data collecting phase. The equivalent of six hours of airborne operations distributed over three separate days are planned for this purpose.

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Imagery collected will be immediately processed and evaluated to insure required data are being produced. Modifications to test plans and even test objects (e.g., the emissivity plates) could be indicated necessary during the course of this sub-task and will lead to appropriate action.

Level of Effort

The ground portion of this test and calibration effort is estimated to require one and a half months of engineer and scientist effort distributed over approximately two weeks time. The airborne portion and photo processing will require respective estimates of a half man month of engineering services and three-tenth man months of technician services.

Item 3 - Step Wedging

This is expected to add \$200 in materials costs and seven tenths man/months in manpower.

B. Regarding Proposal B - Ground Operations

Item 1 - Option 2

Option number 2 for time lapse ground photography as originally presented in proposal 112-GD64, is hereby withdrawn.

Item 2 - Ground Teams

Proposal B called for 14 people serving in seven two man teams to collect ground data. This number is hereby increased to 15 with the inclusion of one MTS-24 at 0.5 man/month effort. This will free one MTS-26 for field supervision and coordination between the seven teams.

Item 3 - Ground Data Reduction

Ground data reduction efforts are hereby increased from 0.75 man/month to 1.5 man/month effort. This appears as part of reporting and briefing on the attached cost analysis.

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Item 4 - Field Confirmation

The importance of field confirmation by making airborne collected data available to the ground parties during the proposed operation is hereby recognized. Consequently \$72 is included for shipping and related charges.

## Item 5 - Radiometers

The original proposal plan indicated one Barnes radiometer would be available for all seven ground data collection teams. The radiometer was costed as a chargeable item. New investigations indicate that the Barnes unit is available on a rental basis. We propose, therefore, to rent two (2) such units for the project rather than purchase one unit and accrue sizeable program economy. Additionally, rental costs may be even less than quoted in the attached cost analysis depending upon which model will be available.

#### Item 6 - Ground Truth Equipment

Proposal B(112-GD64) indicated as purchased items materials necessary to adapt existing [REDACTED] ground truth kits for the subject proposed use and to create 5 additional instrument packages. We hereby withdraw this plan and substitute costs for use of seven [REDACTED] supplied ground truth kits.

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Ground truth operations will make use of seven instrument packs, one for each field team. Two of these instrument packs will be modifications of present  ground truth kits having proven value in extensive domestic and foreign field use. One of these packs will be improved and upgraded to include  to apply the most efficient, modern and accurate methods to the proposed project. The additional five instrument packs will be prepared especially to fulfill the specific needs of this particular project. For costing purposes and convenience all ground truth instrument kits will be valued uniformly at  each and will entail a preparation and maintenance fee of 10% of value per week, inclusive of breakage, damage and loss. The need and use of these instrument packages is estimated at: 5 kits for 2 weeks and 2 kits for 3 weeks.

Item 7 - Radios

[REDACTED] will provide 3 radios for the proposed projects, one in the aircraft and two on the ground. Because the program will require seven radios on the ground, [REDACTED] will rent from a local vendor additional sets for this program.

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C. Scheduling

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For clarification, [redacted] attached cost and price analysis (112-GD64A) is subdivided into the following categories:

1. Equipment Modification and Installation
2. Resolution Testing
3. Air Operations
4. Ground Operations
5. Reporting and Briefing

For convenience the above five units can be grouped as Proposal A - Total Air Operations - including units 1, 2, and 3, and Proposal B - Total Ground Operations - units 4 and 5.

The attached Table A-2 reflects the modified effort as described in this addendum and supercedes Table A-2 of Proposal 112-GD64.

We trust the above will give you the necessary information; however, if you desire additional details please let us know.

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Yours very truly,

[redacted]  
Manager,  
Environmental Science Programs

HES/mjk

Attachments

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## AIR OPERATIONS

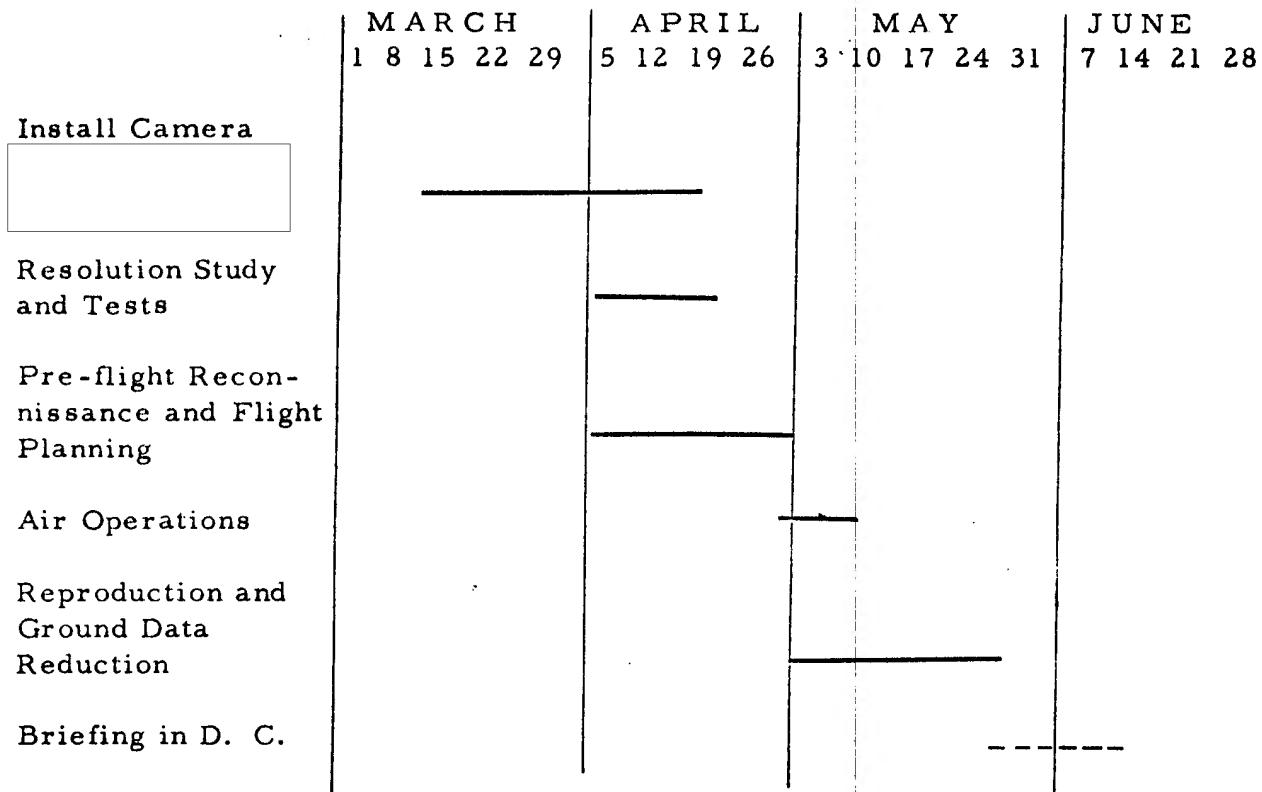


TABLE A-2

*This page is from  
amended proposal*

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